



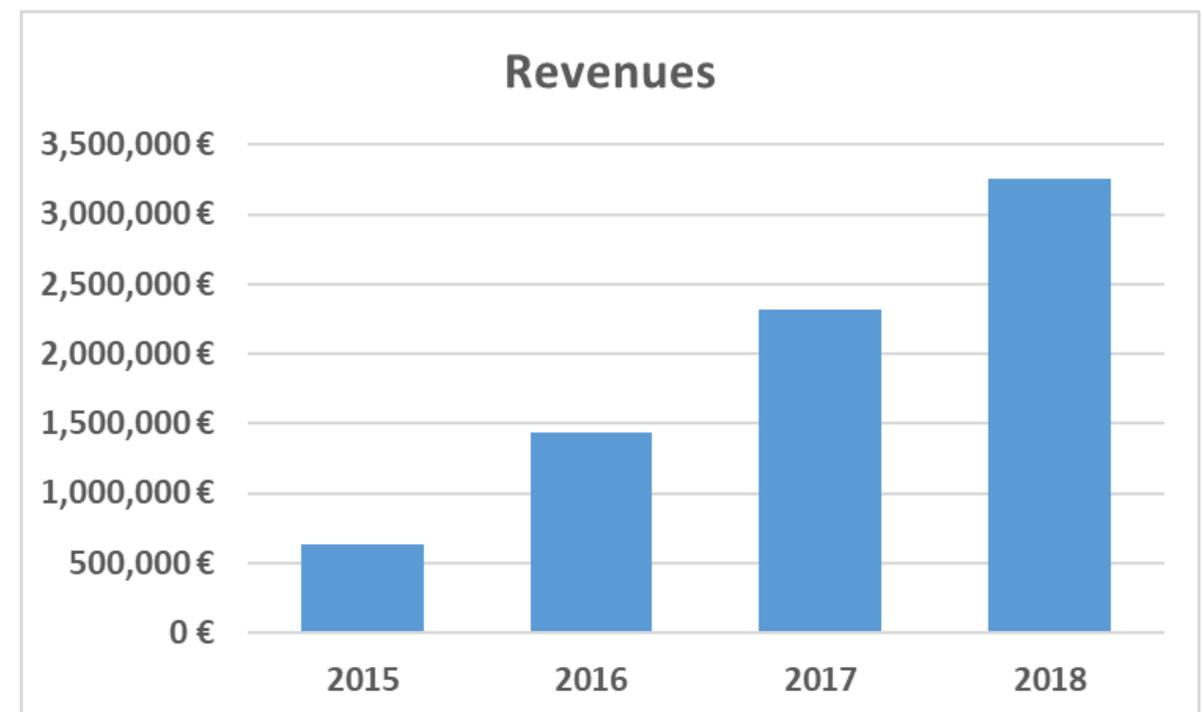
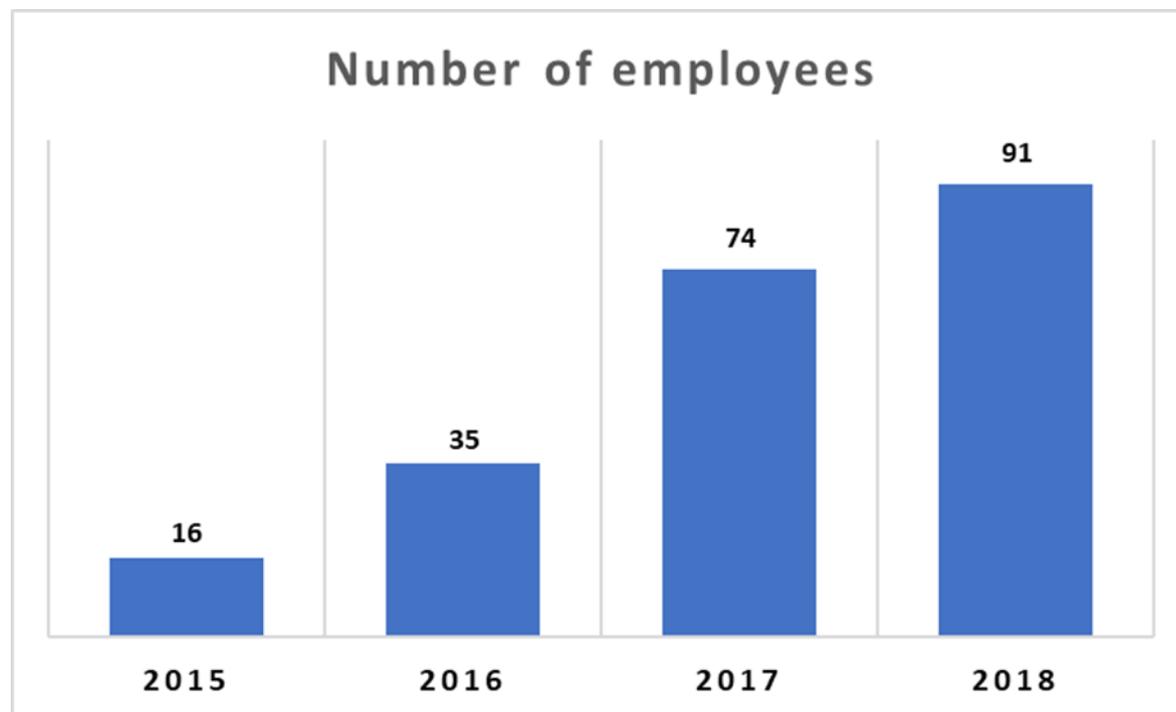
# Future IoT Solutions Today

Dr. Konstantinos Ap. Eleftherianos  
Commercial Director

3<sup>rd</sup> FITCE Technology Forum 2019

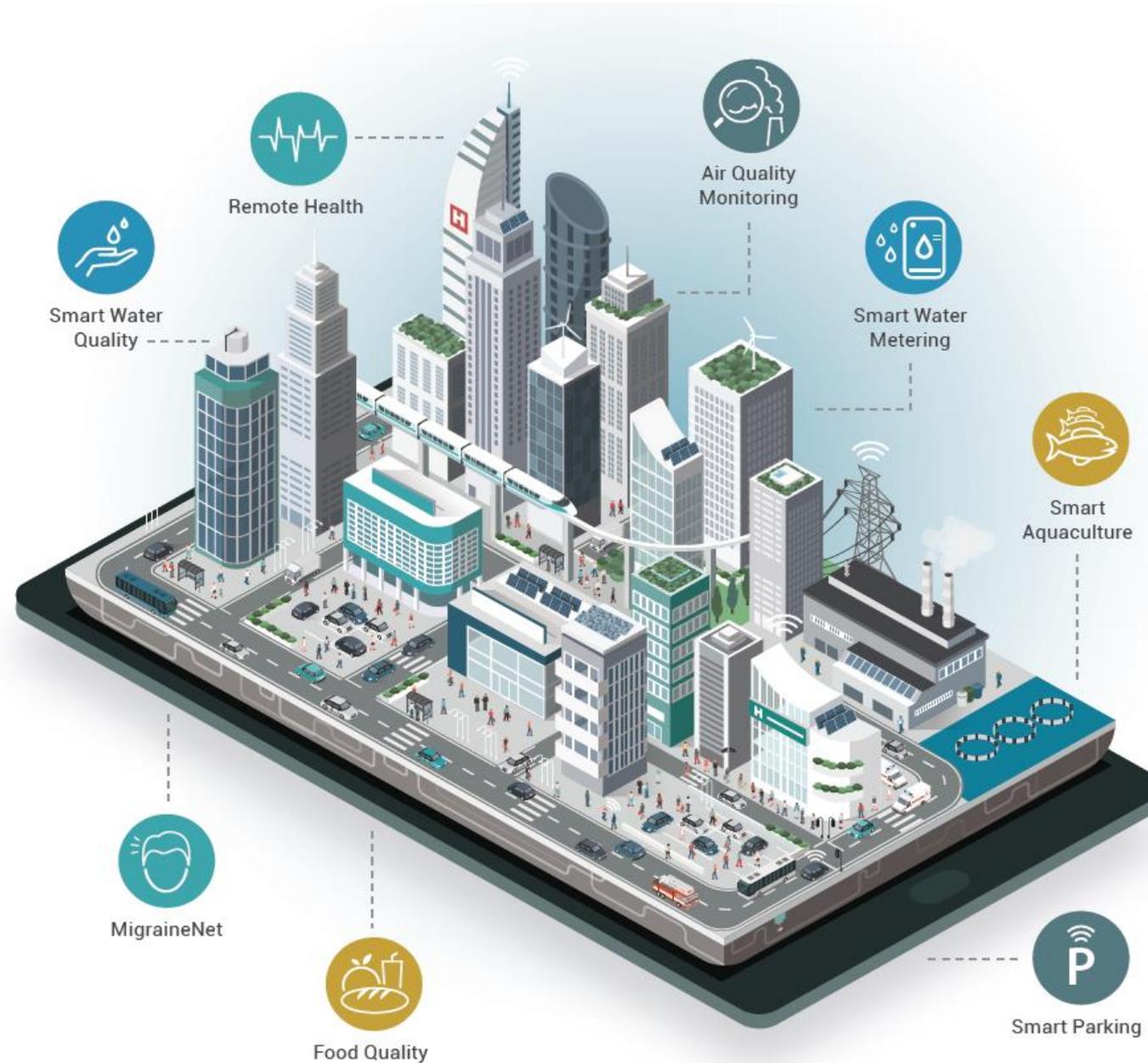
# Who We Are

**WINGS ICT Solutions** provides **integrated AI-powered IoT solutions**. Our advanced experience in **Artificial Intelligence, Big Data, Cloud, Wireless Networking** and **Security Technologies**, enable us to deliver highly reliable and cost effective solutions.



# Fly to IoT Future

## Smart Cities - Utilities - Food - Health



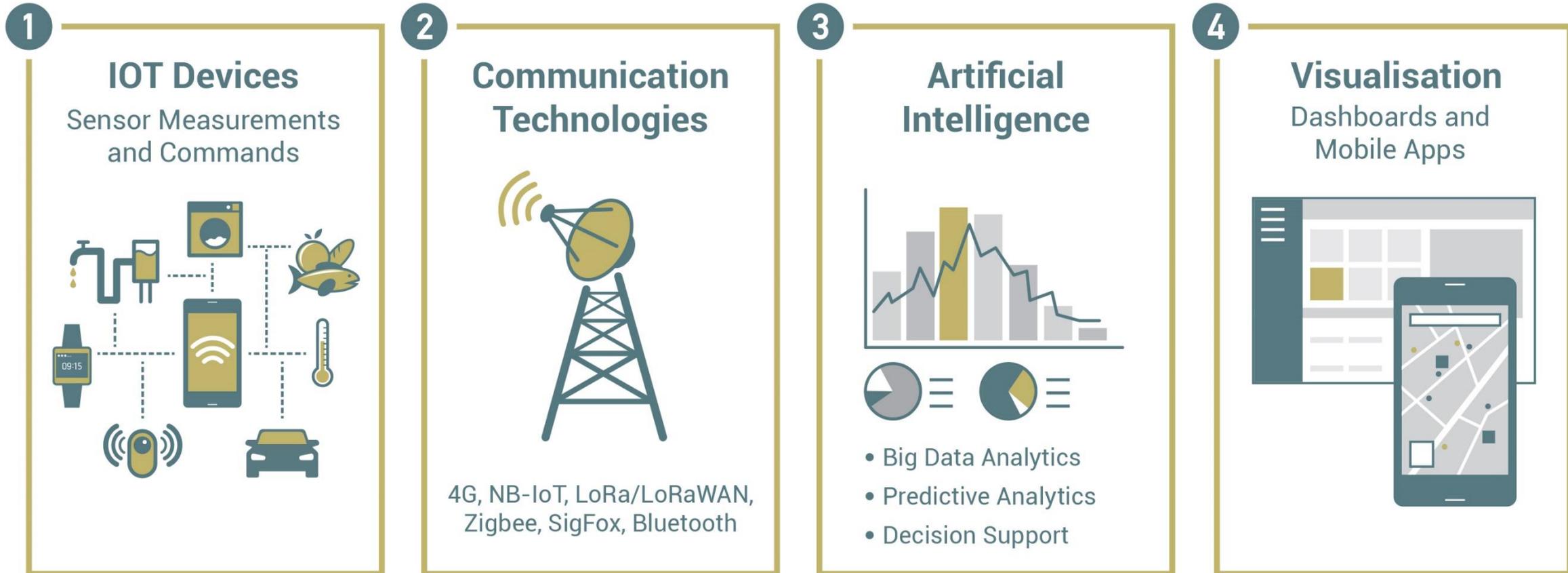
# Fly to IoT Future

## How It Works

## How it works

WINGS integrated IoT Solutions are based on four pillars:

IoT Devices, Communication Technologies, Artificial Intelligence and Data Visualisation.



# Smart Cities

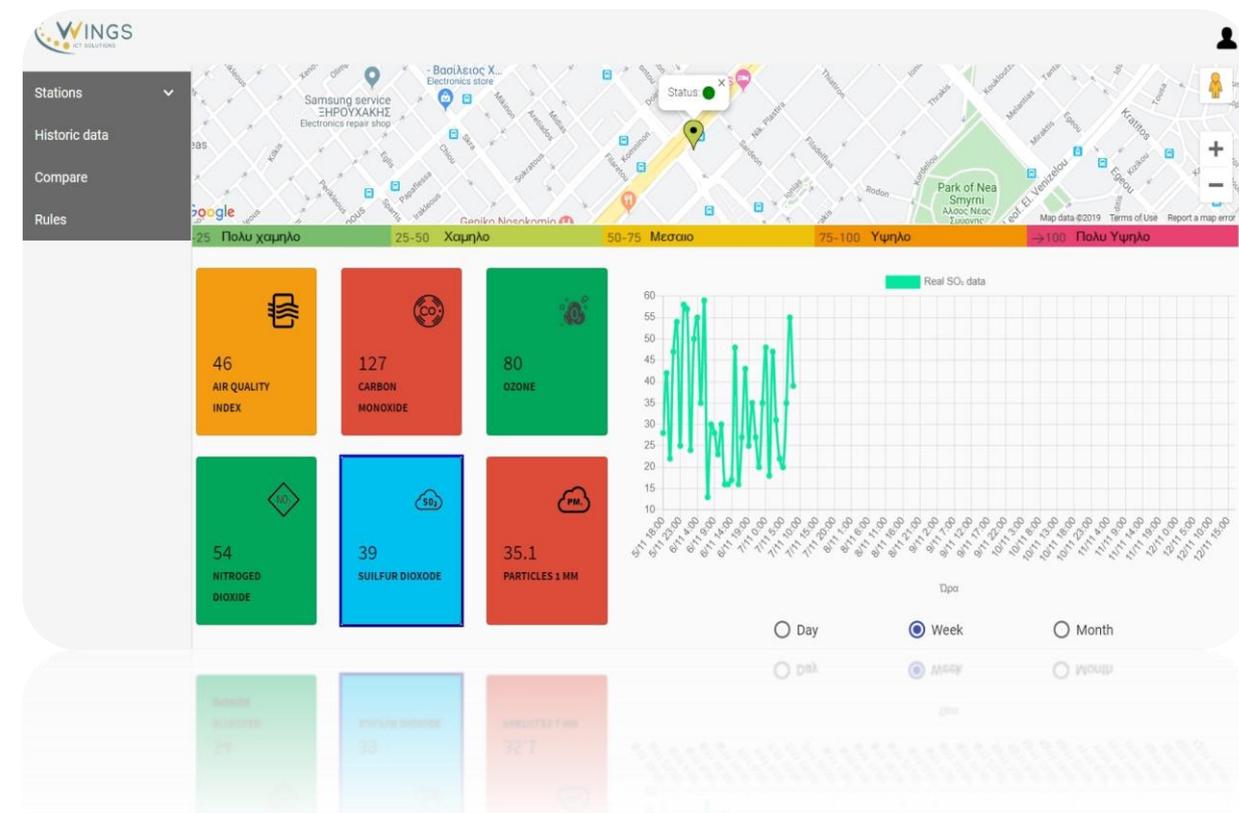
## Air Quality Monitoring

### PROBLEM

- 91% of the world's population lives in places with poor air quality
- 4.2 million deaths annually due to air pollution
- EU imposes Directives to Member States on ambient air quality

### WINGS SOLUTION

- Low cost multi-sensor station measuring:**  $O_3$ ,  $CO$ ,  $SO_2$ ,  $NO$ ,  $NO_2$ ,  $PM1$ ,  $PM2.5$ ,  $PM10$ , noise, temperature and humidity
- Supplementary to existing expensive stations, **providing larger geographical coverage**
- Dashboard with air quality measurements and total Air Quality Index for each station
- Air quality forecasting, alerting and health indications



# Smart Cities

## Smart Parking

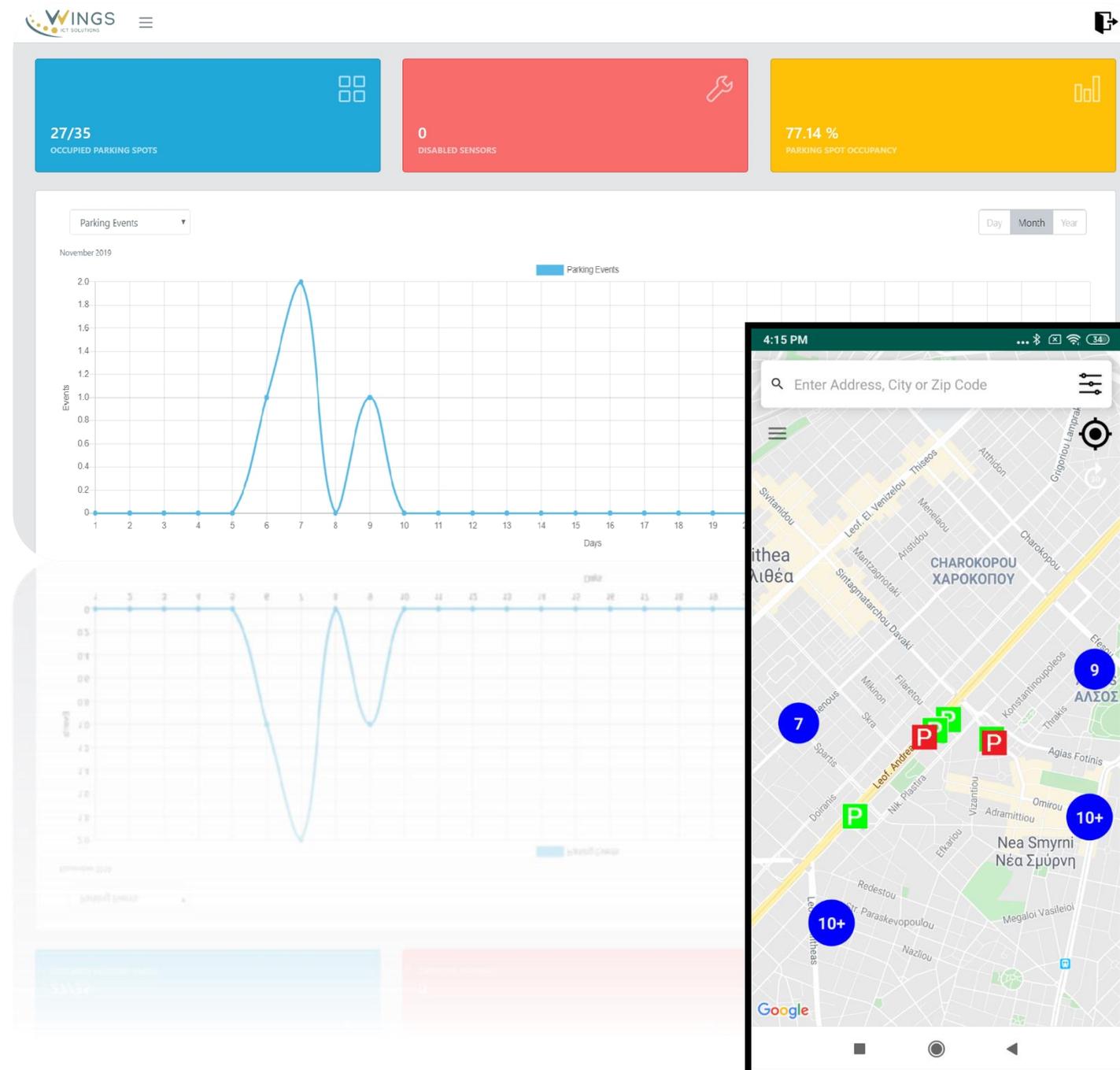
### PROBLEM

Driving around to find a free parking space causes:

- Increased traffic congestions,
- Loss of time
- Increased fuel consumption
- Air pollution

### WINGS SOLUTION

- **Routing instructions** to the nearest area with highest availability of parking slots through Mobile App
- Machine learning for **forecasting parking availability**
- Parking Management Dashboard showing all parking spots, occupancy and sensor status
- Parking sensor, **NB-IoT**, long lasting battery



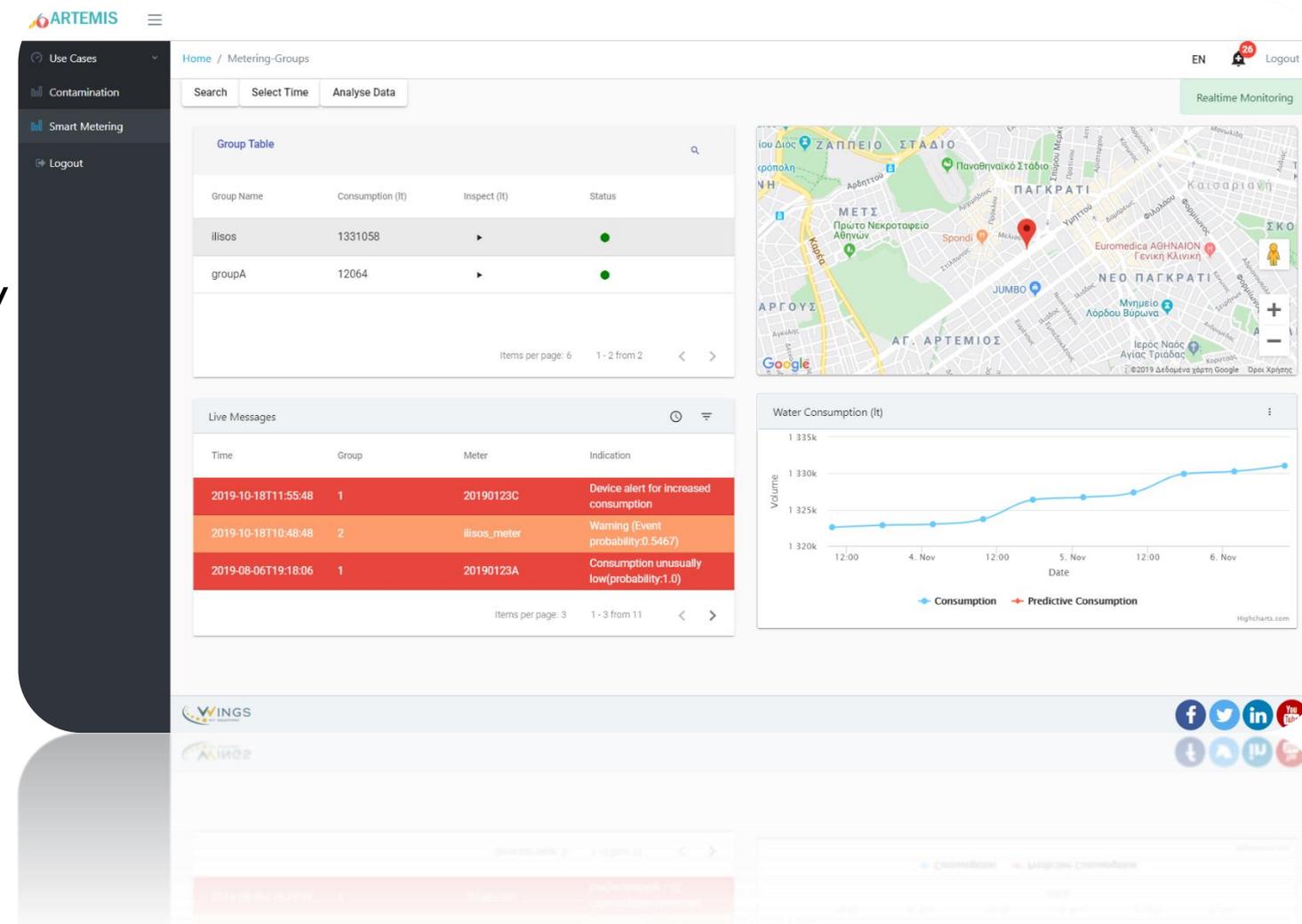
## Smart Metering: Water - Gas - Energy

### PROBLEM

- ❑ Non-Revenue Water reaches 70%
- ❑ Electricity and gas thefts cost tens of millions annually
- ❑ Meter reading is done mainly manually today

### WINGS SOLUTION

- ❑ **Real-time and accurate meter reading and remote management**
- ❑ **Actionable insights** from smart metering
- ❑ Water/Gas/Energy demand forecasting
- ❑ **Leakages/losses detection and early event notification**
- ❑ Optimal utilization and billing of resources
- ❑ **Smart Gateway** (4G, NB-IoT, LoRa) for any type of meter, with **local intelligence** capabilities



# Utilities

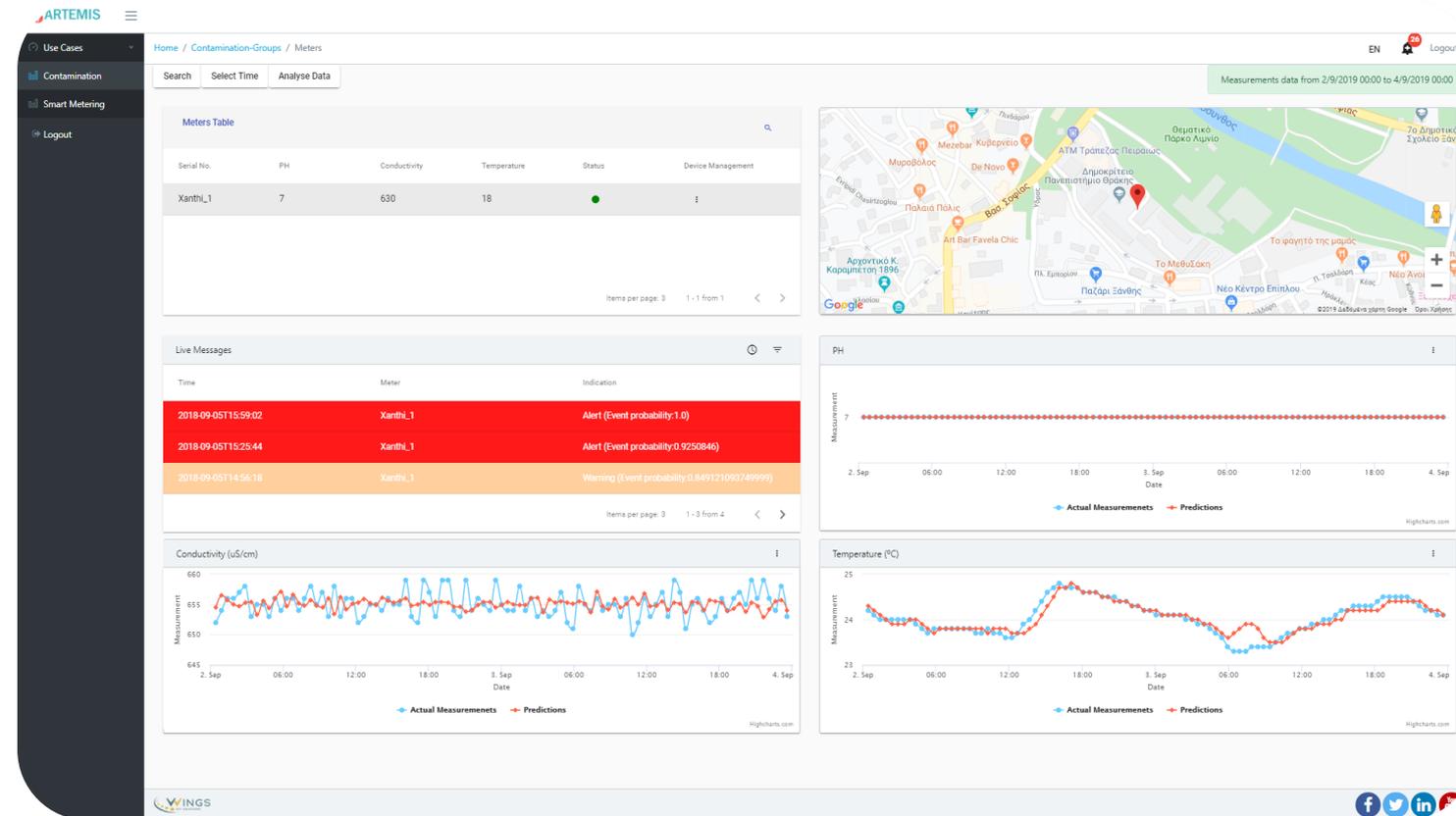
## Smart Water Quality

### PROBLEM

- 1.8 billion people world-wide drink water crucially contaminated
- Water sources often have traces of toxic chemicals

### WINGS SOLUTION

- Real-time and accurate water quality monitoring
- Multi-sensor measuring**, e.g. pH, temperature, conductivity and oxidation-reduction potential
- Remote management of smart sensor network
- Smart Gateway** (4G, NB-IoT, LoRa) for any type of meter, with local intelligence capabilities for selected quality sensors



Democritus Univ.  
Xanthi



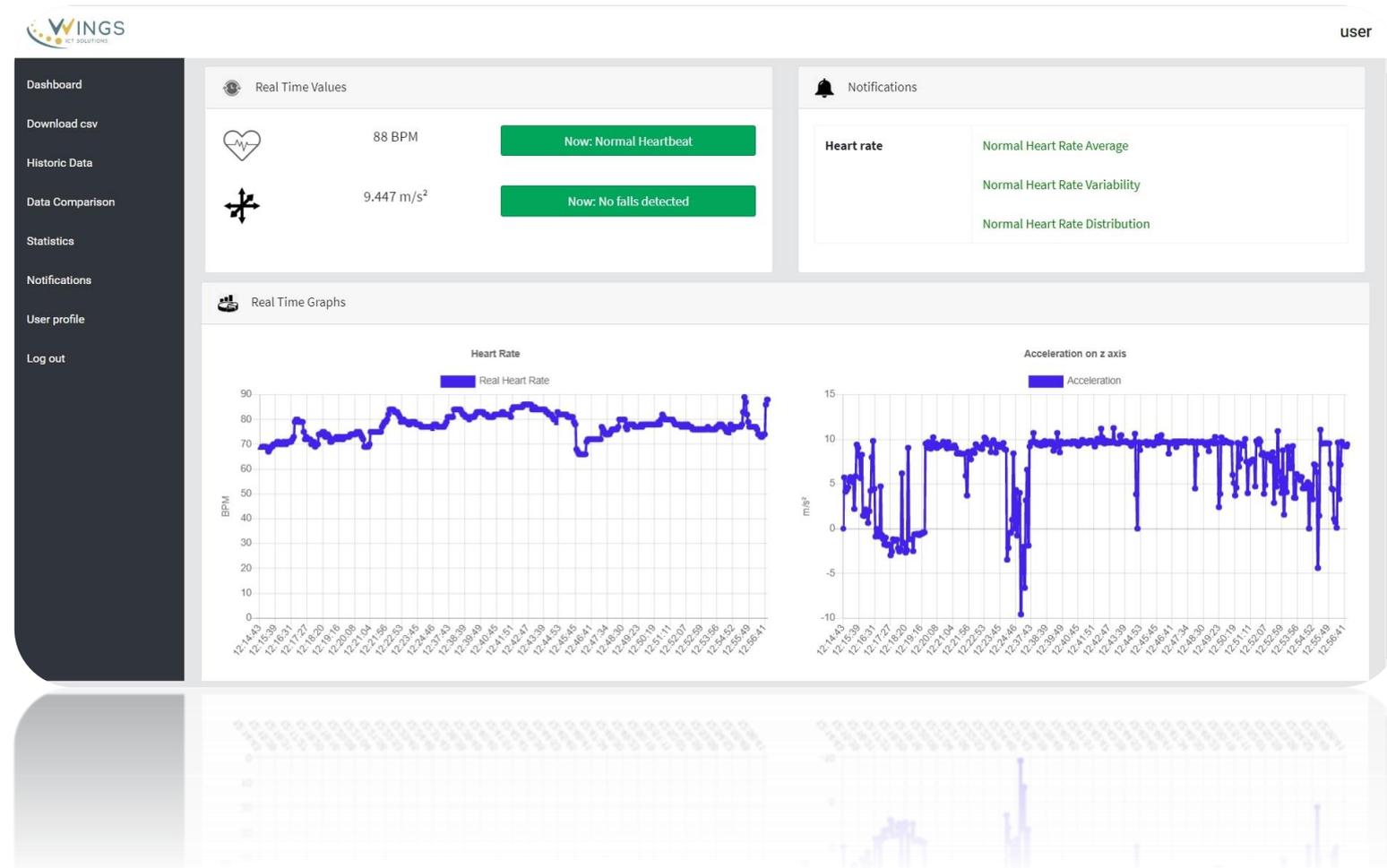
# Remote Health Monitoring & Forecasting

## PROBLEM

- Elderly, disabled or people with chronic diseases do not feel secure when living alone.

## WINGS SOLUTION

- **Real-time monitoring** of user's health and wellbeing status
- **Forecasting** of future issues and health emergencies
- **Notifications** of users, family members or doctors



# e-Health

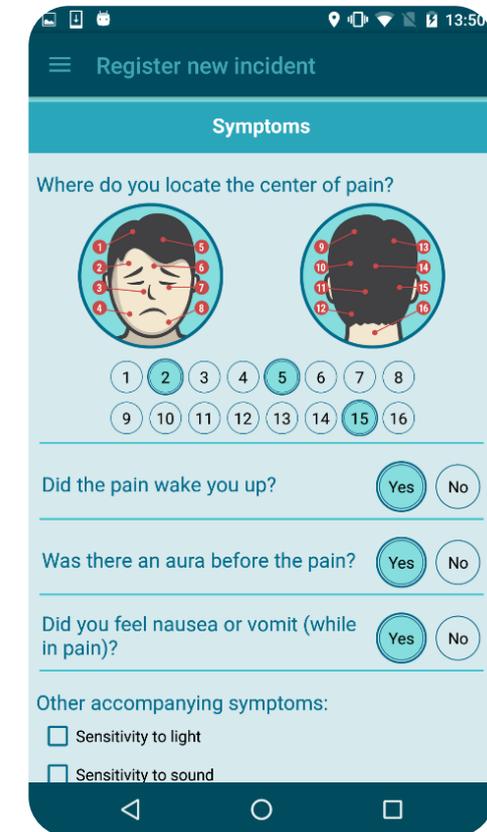
## MigraineNet

### PROBLEM

- 15% of the world population suffers from migraines
- 50% of migraineurs prefer self-treatment than visiting a doctor.

### WINGS SOLUTION

- Mobile Application for **migraine incidents prediction**
- Patients manage better their health condition and schedule their activities
- Patients may **minimize incidents** by avoiding the triggering factors and receiving their medication on time



# Food

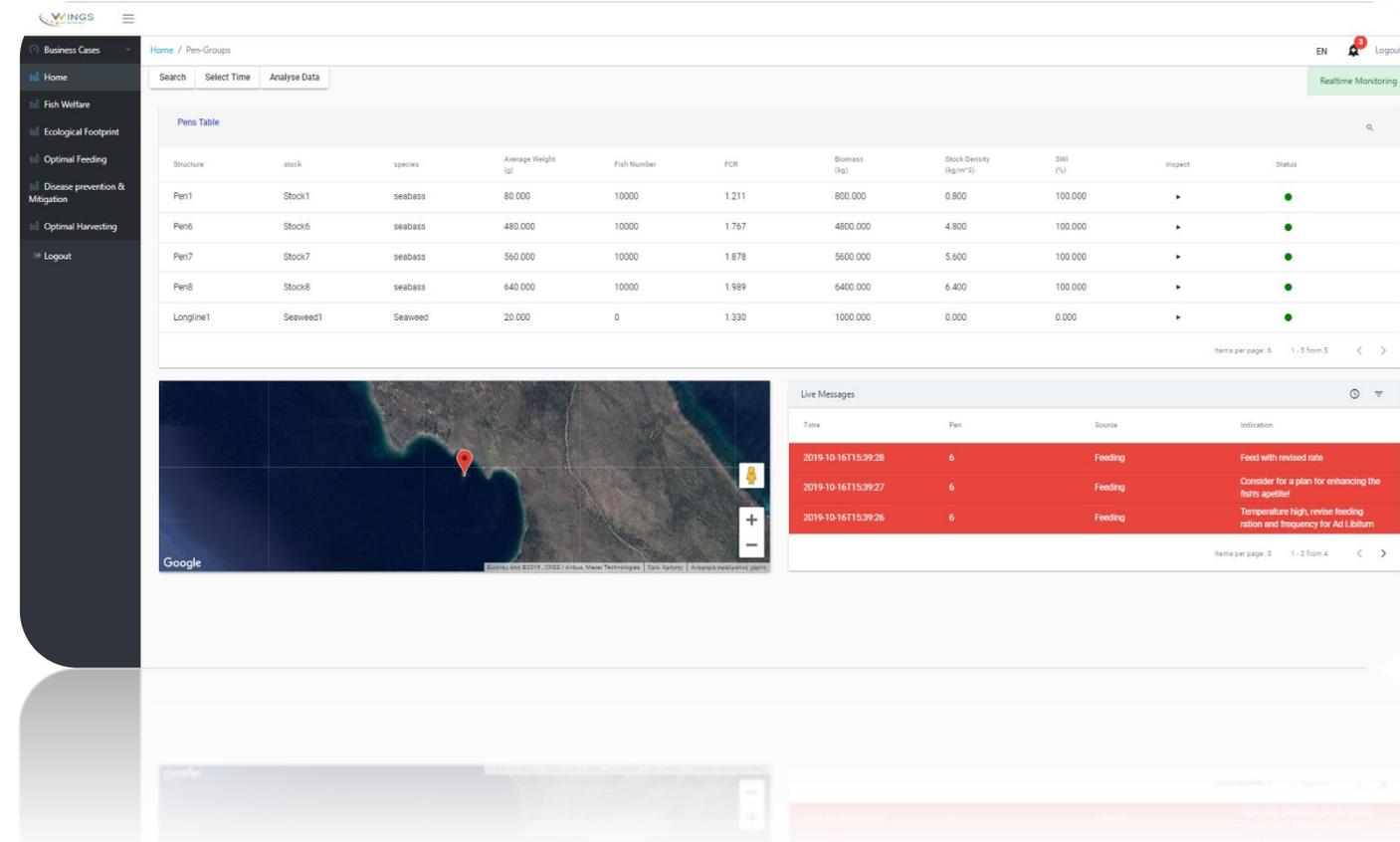
# Smart Aquaculture

## PROBLEM

- Aquaculture management is done mainly manually
- Costs are high due to non-optimum feeding
- Fish diseases cause production losses

## WINGS SOLUTION

- Multi-purpose, multi-sensing, real-time status monitoring and data analytics platform
- **Production operations optimisation** based on decision-support system
- **Advanced Analytics:** Disease Diagnosis, Intelligent Feeding, Water Quality Analytics, Behaviour Analysis
- **Smart Gateway** (4G, NB-IoT, LoRa) for any type of meter, with local intelligence capabilities for selected aquaculture sensors



Structure	Stock	Species	Average Weight (kg)	Fish Number	FCR	Biomass (kg)	Stock Density (kg/m <sup>2</sup> )	DWI (%)	Inspect	Status
Pen1	Stock1	seabass	80.000	10000	1.211	800.000	0.800	100.000	▶	●
Pen6	Stock6	seabass	480.000	10000	1.767	4800.000	4.800	100.000	▶	●
Pen7	Stock7	seabass	560.000	10000	1.878	5600.000	5.600	100.000	▶	●
Pen8	Stock8	seabass	640.000	10000	1.989	6400.000	6.400	100.000	▶	●
Longline1	Seaweed1	Seaweed	20.000	0	1.330	1000.000	0.000	0.000	▶	●

Time	Pen	Source	Indication
2019-10-16T15:39:28	6	Feeding	Feed with revised rate
2019-10-16T15:39:27	6	Feeding	Consider for a plan for enhancing the fish's appetite!
2019-10-16T15:39:26	6	Feeding	Temperature high, revise feeding ration and frequency for Ad Libitum

Keywater  
Fisheries Ireland



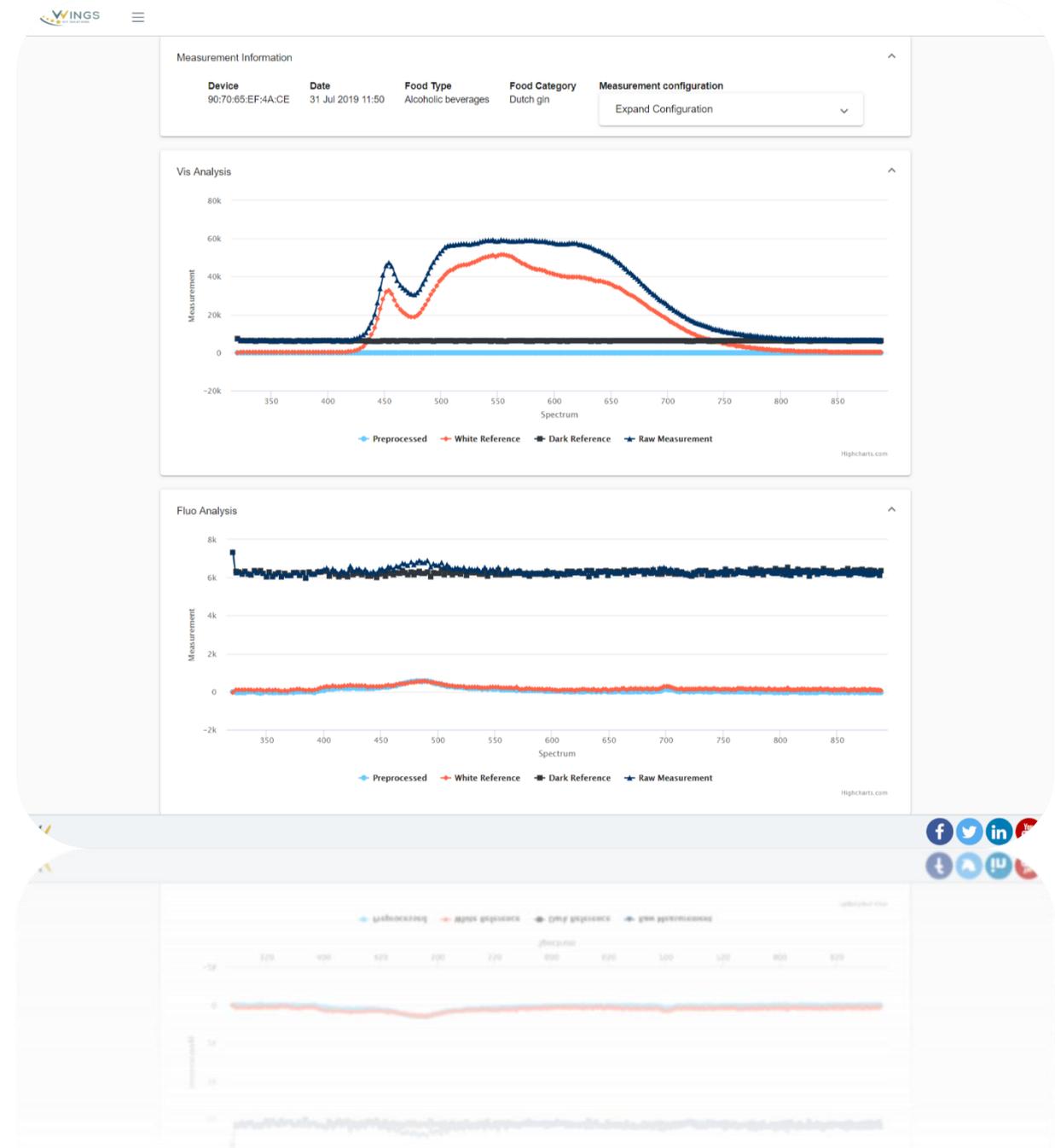
# Food Food Quality

## PROBLEM

- 600 million people fall ill due to contaminated food
- Almost 420.000 die every year
- Food fraud often occurs, with potentially hazardous elements.

## WINGS SOLUTION

- Low-cost, multi-target, food sensitive, mini-portable scanner
- **Food adulteration**, identification and analysis
- Integration of heterogeneous spectroscopic technology and digital cameras
- **Fast characterization** of food through Machine Learning



# Why WINGS ICT Solutions

- ✓ Advanced solutions for Smart Cities, Utilities, Food and e-Health; expanding to Industry, Logistics & Shipping
- ✓ Applies advanced concepts/technologies through forward-looking research (own/EU-funded)
- ✓ Strong competence in IoT, Artificial Intelligence, Predictive Analytics and Wireless Networking (5G, NB-IoT, LoRa, etc.)
- ✓ More than 90 Software Developers and Solution Architects
- ✓ High quality, flexible and cost-effective AI-powered IoT solutions
- ✓ Partnerships with IBM, Intel, Cosmote, Ericsson, Intrasoft
- ✓ Reliable Customer Support

Thank You!